



Natural Heritage & Endangered Species Program

Commonwealth of Massachusetts
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Natural Community Fact Sheet Talus Forest/Woodland Communities



Large talus below a cliff. BA Sorrie, NHESP

Community description

Talus Forest / Woodland

Communities occur on boulder strewn slopes with scattered and clumped, somewhat dwarfed trees, tall shrubs, and a lower layer dominated by vines and ferns. There is often a gradient of vegetation, with short, sparse

vegetation on exposed rocks at the base of the cliff above the talus slope, and gradually more and taller trees to the base of the slope, with increasing closure of the canopy. The Talus Forest / Woodland grades into surrounding forests which are usually taller and more diverse. Small slopes and edges and bottoms of larger slopes may have closed canopy coverage from surrounding trees.



Small talus at the base of a basalt cliff. BA Sorrie, NHESP

Environment

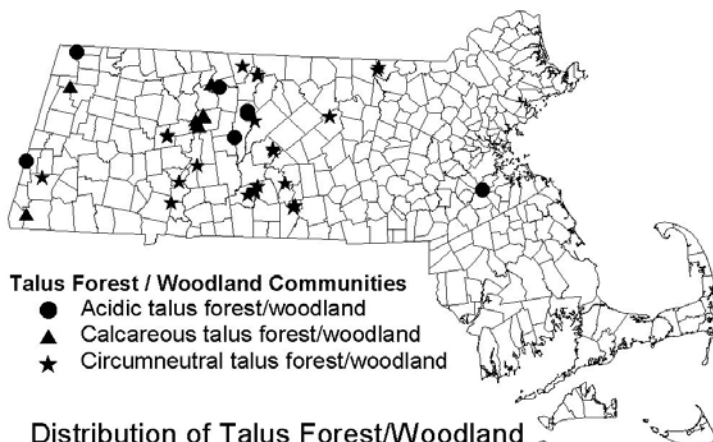
The Talus Forest/Woodland Community develops on dry to mesic, loose rock slopes below cliffs or rock outcrops: talus slopes develop as rocks fall from the cliffs above. Rock outcrops, cliffs, and talus all support separate and fairly distinctive natural communities adjacent to and grading into each other, all within and reflecting the surrounding matrix forest. Three types of talus forest are classified depending on the chemistry of the rock: Acidic (which implies low nutrient availability), Circumneutral (pH is around 7, used to indicate less acidity and availability of some calcium and other nutrients), and Calcareous (alkaline, named for calcium availability).

In general, younger talus higher on a slope has bare rock; older boulders lower on the slope are often

covered with lichen or moss, with decaying leaf litter among them. Open talus areas are drier, and rocks are bare or covered by lichens. Often there is little soil formed on these areas, in part because of steepness and the resulting rapid erosion, but also because these areas are likely to be well-drained, open to the drying effects of the wind and sun. Lower talus may be shaded and moist.

Range:

Talus Forest/Woodlands occur in Massachusetts where there are bedrock



outcrops high enough to break off and fall to create talus slopes, mostly the Connecticut Valley and west; the surface geology of southeastern Massachusetts, the Cape, and the Islands does not include bedrock hills. North of Boston, hills tend to be too low to develop talus that supports separate communities. Worcester County has many rolling hills, with a few areas of talus slopes.

Acidic Talus Forest / Woodland are considered to be sufficiently common (S4) in Massachusetts that the Natural Heritage & Endangered Species Program (NHESP) keeps track of only very high quality examples of the community type: currently there are seven examples in the NHESP database.

Circumneutral and Calcareous Talus Forest / Woodland are less common (S3): good to excellent examples of both are tracked. There are nine examples of Calcareous Talus Forest / Woodland in the database from Berkshire County and the Connecticut Valley. Seventeen examples of Circumneutral Rock Cliffs are tracked in the Berkshires, Connecticut Valley, and along geological fault lines further east.

Characteristic plant species in Massachusetts

Talus Forest / Woodland communities reflect the regional vegetation where they occur. They grade into surrounding forests which are usually taller. Canopies are formed by a mix of regional tree species. In southern Massachusetts, the trees include more oaks than further north. In all the talus communities, Rock Polypody (*Polypodium virginianum*), Corydalis (*Corydalis sempervirens*), Virginia Creeper (*Parthenocissus quinquefolia*), and Poison Ivy (*Toxicodendron radicans*) contribute to the herbaceous and vine flora. In exposed talus slopes lichen often covers the exposed rocks.

Generally, if a talus community includes oaks (*Quercus* species, particularly *Q. prinus*) besides Red Oak (*Q. rubra*), American Beech (*Fagus grandifolia*), Eastern Hemlock (*Tsuga canadensis*), White Pine (*Pinus strobus*), or Mt. Laurel (*Kalmia latifolia*), it is an Acidic Talus Forest / Woodland. In Circumneutral Talus Forest / Woodland communities, the canopy is formed by a mix of deciduous forest species, including maples (*Acer saccharum* and *A. rubrum*), birches (*Betula lenta* and *B. papyrifera*), White Ash (*Fraxinus americana*), Shagbark Hickory (*Carya glabra/ovalis*), Red Oak (*Quercus rubra*), with Hop-hornbeam (*Ostrya virginiana*) in the subcanopy. Circumneutral Talus occasionally includes clematis (*Clematis* spp.). Marginal Wood-fern (*Dryopteris marginalis*) and the debatably exotic Herb Robert (*Geranium robertianum*) are major components of the sparse herbaceous layer, which includes scattered grasses and sedges.

Sugar Maple (*Acer saccharum*) is usually the dominant species of Calcareous Talus Forest / Woodlands. Shrubs, abundant if the canopy is open, include Round-leaved Dogwood, also called Talus-dogwood (*Cornus rugosa*). The herbaceous layer includes Meadow Rue (*Thalictrum* spp.), Jack-in-the-pulpit (*Arisaema triphyllum*), Broad-leaved Woodland Sedge (*Carex platyphylla*), and Walking-fern (*Asplenium rhizophyllum* = *Camptosorus rhizophyllum*). Calcareous Talus Forest / Woodland shares many species with Rich Mesic Forest—moist lower slopes on calcareous rock with well established forests are often classified as Rich, Mesic Forest Communities.

Characteristic animal species in Massachusetts

Most animals are not sensitive to the pH of the substrate, but respond to the size of boulders, cover, moisture, and surroundings of the talus slope. Talus slopes offer good drainage and passageways to deep underground where temperatures are above freezing in the winter. Porcupines (*Erethizon dorsatum*) den in large boulder fields and turkey vultures (*Cathartes aura*) nest in other large boulder fields, but snakes hibernate in talus with smaller stones. For many animals associated with talus slopes, the talus is just part of their larger habitat that includes adjacent rock habitats and surrounding forests; the animals may move among them over the course of a day, a season, or a year. Song birds of talus slopes tend to be those of the surrounding forests.

Associated Rare Species

Many rare species are associated with circumneutral and calcareous talus slopes: most of the plants are uncommon in Massachusetts due to the restricted availability of habitat with calcium that these species

need. Climbing Fumitory (*Adlumia fungosa*)(SC), Roundleaf Shadbush (*Amelanchier sanguinea*)(SC), and Purple Clematis (*Clematis occidentalis*)(SC) are most common on the sunlit upper talus slopes. Butternut (*Juglans cinerea*)(WL), Lily-leaf Twayblade (*Liparis liliifolia*)(T), and Red Mulberry (*Morus rubra*)(E) are more likely to be found in the shade towards the base of the talus. Other plants, including some ferns grow among the boulders where it is moist, or on the boulders where it must be quite dry. In all types of talus communities, the broken rock of the talus slopes provides areas for rare, as well as more common, snakes to hibernate with associated rock outcrops used for basking –and the relative isolation of some of the sites, provide several species of rare snake with habitat. Rock Shrews (*Sorex dispar*)(SC) inhabit shaded, cool talus slopes and crevices in rock cliffs and outcroppings in coniferous forests of Berkshire County.

Protected under the Massachusetts Endangered Species Act: SC=State Special Concern, T=State Threatened, E=State Endangered.
Not Regulated: WL=Watch List

Threats and Management Recommendations

The calcium enrichment and moistness of the lower areas of the circumneutral and calcareous talus slopes attract invasive exotic species, as well as the native species. Because invasive exotic species often enter a natural community after some form of disturbance, restricting human derived disturbances would help keep invasive species out. However, since natural disturbances are part of the normal processes in talus, the best occurrences need to be monitored for invasive species that should be controlled and removed where practical. Although Acidic Talus is much less attractive to invasive species than the richer areas, excellent occurrences should also be monitored. Heavy logging of or around talus communities or hemlock die-off from Woolly Adelgid infestation would reduce the shade cover of the lower slopes and drastically change the habitat. Alteration of surrounding areas, such as by development, would fragment and reduce the overall habitat available for those species for which talus is only part of their habitats. Several of the species of talus slopes, such as some of the snakes, do best away from humans – leaving areas around the talus slopes that provide their habitat is the best way to protect them and the other species that depend on these habitats.